Phay J. Ho
Assistant Scientist

Atomic, Molecular, and Optical Physics Group
Chemical Sciences and Engineering Division
Argonne National Laboratory
Email: pho@anl.gov

Research Interests and Experience

- Physics of atoms, molecules and clusters with optical lasers, synchrotron radiation and free-electron lasers
- Theoretical methods and computational models for studying light-induced processes and solvation dynamics of complex systems on massively parallel supercomputers
- Multiphoton and inner-shell physics, ultrafast electronic excitation and charge transfer dynamics in ultraintense x-ray pulses
- Electronic structure theory for many-body systems
- Methodology development for studying time-dependent many-body systems, including density matrix, classical-trajectory and hybrid quantum-classical approach

Positions

2015-present	Assistant Physicist, Argonne National Laboratory
2010-2015	Term Assistant Physicist, Argonne National Laboratory
2007–2010	Argonne Scholar, Argonne National Laboratory
2006-2006	Visiting Scientist, Max-Born Institute, Berlin, Germany
2003–2007	Graduate Research Assistant, University of Rochester

Education

2001-2007	University of Rochester, New York, USA, Ph.D (2007)
2000-2001	Louisiana State University, Louisiana, USA, MS (2000)
1996-2000	Louisiana State University, Louisiana, USA, BS (2000)

Awards

2007-2009	Director Postdoctoral Fellowship, Argonne National Laboratory
2006	DAAD Fellowship, German Academic Exchange Service
2005	Messersmith Fellowship, University of Rochester
2003	Excellent Graduate Teaching Assistant Award, University of Rochester
2001-2003	Marshak Graduate Fellowhship, University of Rochester

Publications Since 2014

7) P. J. Ho and C. Knight, *Large-scale Atomistic Calculations of Clusters in Intense X-Ray Pulses*, invited review article submitted to J. Phys. B: At. Mol. Opt. Phys. (2017).

6) P. J. Ho, C. Knight, M. Tegze, G. Faigel and L. Young, *Atomistic three-dimensional coherent x-ray imaging of nonbiological systems*, Phys. Rev. A **94**, 063823 (2016).

5) C.S. Lehmann, A. Picon, C. Bostedt, A. Rudenko, A. Marinelli, D. Moonshiram, T. Osipov, D. Rolles, N. Berrah, C. Bomme, M. Bucher, G. Doumy, B. Erk, K.F. Ferguson, T. Gorkhover, P.J. Ho, E.P. Kanter, B. Krässig, J. Krzywinski, A.A. Lutmann, A.M. March, D. Ray, L. Young, S.T. Pratt, and S.H. Southworth, *Ultrafast x-ray induced nuclear dynamics in diatomic molecules using femtosecond x-ray-pump-x-ray-probe spectroscopy*, Phys. Rev. A **94**, 013426 (2016).

4) A. Picón, C.S. Lehmann, C. Bostedt, A. Rudenko, A. Marinelli, T. Osipov, D. Rolles, N. Berrah, C. Bomme, M. Bucher, G. Doumy, B. Erk, K.R. Ferguson, T. Gorkhover, P.J. Ho, E.P. Kanter, B. Krässig, J. Krzywinski, A.A. Lutman, A.M. March, D. Moonshiram, D. Ray, L. Young, S.T. Pratt, S.H. Southworth, *Hetero-site-specific X-ray pump-probe spectroscopy for femtosecond intramolecular dynamics*, Nature Comms. **7**, 11652, (2016).

3) Y. Li, Z. Jiang, X.-M. Lin, H. Wen, D. A. Walko, R. Subbaraman, S. Sankaranarayanan, S. Gray and P. J. Ho, *Femtosecond Laser Pulse Driven Melting in Gold Nanorod Aqueous Colloidal Suspension: Identification of a Transition from Stretched to Exponential Kinetics*, Scientific Reports **8**, 8146 (2015).

2) P. J. Ho, E. P. Kanter, and L. Young, *Resonance-mediated atomic ionization dynamics induced by ultraintense x-ray pulses*, Phys. Rev. A **92**, 063430 (2015).

1) P. J. Ho, C. Bostedt, S. Schorb, and L. Young, *Theoretical Tracking of Resonance-Enhanced Multiple Ionization Pathways in X-ray Free-Electron Laser Pulses*, Phys. Rev. Lett. **113**, 253001 (2014).

Invited Talks Since 2014

5) Workshop on The Electronic-Structure Problem in Theoretical Strong-Field Physics, ITAMP, *Ultraefficient ionization dynamics of atoms and clusters by intense x-ray radiation*, Cambridge (Massachusetts), December 2016.

4) Department of Energy, Office of Basic Energy Sciences, AMOS Research PI Meeting, *Large-scale Atomistic Calculations of Intense X-ray Laser Dynamics in Nanoclusters*, Gaithersburg (Maryland), October 2015.

3) The 46th Winter Colloquium on the Physics of Quantum Electronics, *Imaging Electron Dynamics with Coherent X-rays*, Snowbird (Utah), January 2016.

2) 2016 European XFEL Users' Meeting and Satellite Meetings, *Response to Peak-Intensity X-ray Pulses from Atoms to Complex Systems*, DESY, Hamburg (Germany), January 2016.

1) University of Rochester, Center for Coherence and Quantum Optics, *Exploring the dynamics and structure of atoms, molecules and nanoparticles with ultrafast x-ray sources*, Rochester, (New York), April 2014.